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Serial No. 10/672,009

Filing Date: September 26, 2003

Title: SURGICAL CONNECTION APPARATUS AND METHODS

In the claims:

Please amend the claims as follows:

1. (Original) Surgical connection apparatus comprising:

a support structure;

a plurality of self-closing clips, each clip being releasably coupled to said support

structure; and

a plurality of barbs, each barb being coupled to said support structure, said barbs being

separate from said clips, which are ejectable from said support structure independently of said

barbs.

2. (Original) The apparatus of claim 1 wherein said support structure comprises a

plurality of members, each clip being releasably coupled to one of said plurality of members.

3. (Original) The apparatus of claim 2 wherein each of said plurality of members

comprises a tubular member and each clip is slidably disposed in a tubular member.

4. (Previously Presented) The apparatus of claim 3 further including a plunger movably

coupled to said support structure and a pusher disposed in each of said plurality of members,

each pusher having a proximal end being secured to said plunger and a distal end portion coupled

to a respective clip so that movement of said plunger moves all of said clips therewith.

5. (Previously Presented) The apparatus of claim 4 wherein each clip has a memory set

closed configuration, when said clips are disposed in said tubular members each tubular member

biases a respective clip away from said closed configuration, and when said clips are released

from said tubular members said clips move toward their memory set closed configuration.

6. (Original) The apparatus of any one of claims 1-3 further including means for

simultaneously deploying said clips.

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7. (Original) The apparatus of any one of claims 1-5 wherein said barbs are slidably

coupled to said support structure.

8. (Original) The apparatus of claim 1 wherein said support structure comprises a first

plurality of members, each clip being releasably coupled to one of said first plurality of members,

and a second plurality of members, each barb being coupled to one of said second plurality of

members.

9. (Original) The apparatus of claim 8 wherein each of said first and second plurality of

members comprises a tubular member and each of said clips and barbs are slidably disposed in a

respective tubular member.

10. (Currently Amended) The apparatus of claim 9 further including a plunger movably

coupled to said support structure and a pusher disposed in each of said first plurality of members,

each pusher having a proximal end being secured to said plunger and a distal end portion coupled

to a respective clip so that movement of said plunger moves all of said clips therewith.

11. (Original) The apparatus of claim 10 further including a second plunger movably

coupled to said support structure, each barb having a distal end and a proximal end, said second

plunger being coupled to each barb proximal end so that said second plunger moves all of said

barbs therewith.

12. (Previously Presented) The apparatus of claim 10 or 11 wherein each clip has a

memory set closed configuration, when said clips are disposed in said first plurality of tubular

members each tubular member biases a respective clip away from said closed configuration, and

when said clips are released from said tubular members said clips move toward their memory set

closed configuration.

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- 13. (Previously Presented) The apparatus of claim 10 or 11 wherein each barb has a distal portion with a memory set hook configuration, when said barb distal end portions are disposed in said second plurality of tubular members each tubular member biases a respective barb distal end portion away from said hook configuration, and when said barb distal end portions are extended away from said tubular members said barbs move toward their memory set hook configuration.
- 14. (Previously Presented) The apparatus of claim 8 or 9 further including means for simultaneously deploying said clips.
- 15. (Previously Presented) The apparatus of claim 8 or 9 further including means for simultaneously deploying said barbs.
- 16. (Previously Presented) The apparatus of claim 8 or 9 further including means for simultaneously deploying said clips and means for simultaneously deploying said barbs independently of said clips.
 - 17. (Currently Amended) Surgical connection apparatus comprising:
- a support structure comprising a first plurality of arms and a second plurality of arms wherein the first plurality of arms forms[[ing]] a first plurality of paths and the second plurality of arms forms a second plurality of paths;
- a plurality of clips, each clip being slidably disposed in one path of said the first plurality of paths; and
- a plurality of barbs, each barb being slidably disposed in one path of said the second plurality of paths; wherein said the clips are separate from said the barbs and are movable independently of said the barbs[[.]] and

wherein the first plurality of arms and the second plurality of arms are arranged to form a plurality of arm pairs.

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18. (Canceled)

19. (Original) The apparatus of claim 17 further including a plunger movably coupled to

said support structure and a pusher disposed in each of said first plurality of paths, each pusher

having a proximal end being secured to said plunger and a distal end portion coupled to a

respective clip so that movement of said plunger moves all of said clips therewith.

20. (Original) The apparatus of claim 19 further including a second plunger movably

coupled to said support structure, each barb having a distal end and a proximal end, said second

plunger being coupled to each barb proximal end so that said second plunger moves all of said

barbs therewith.

21. (Original) The apparatus of claim 20 wherein said plungers are independently

movable.

22. (Currently Amended) Surgical connection apparatus for connecting a first structure to

a second structure, said the connection apparatus comprising:

a support structure comprising a plurality of arm pairs,

the plurality of arm pairs comprising a first plurality of arms and a second plurality of

<u>arms,</u>

a plurality of barbs coupled to said the first plurality of arms support structure,

a plurality of clips being slidably coupled to said the second plurality of arms support

structure and independent of said the barbs;

means for moving said the barbs; and

means for ejecting said the clips from said the support structure.

23. (Original) The apparatus of claim 22 wherein said clips comprise shape memory

material, have a memory set closed configuration, and move toward said closed configuration

when ejected from said support structure.

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24. (Original) The apparatus of claim 23 wherein said clip ejecting means ejects said

clips simultaneously.

25. (Original) The apparatus of claim 22 wherein said clip ejecting means ejects said

clips simultaneously.

26. (Original) The apparatus of claim 25 wherein said barb moving means provides

means for extending the barbs from said support structure and retracting the barbs into said

support structure.

27. (Original) The apparatus of any one of claims 24-26 wherein said barb moving

means moves said barbs simultaneously.

28. (Currently Amended) Surgical connection apparatus for connecting a first structure

to a second structure, said the connection apparatus comprising:

a support structure comprising a plurality of arm pairs, the plurality of arm pairs

comprising a first plurality of arms and a second plurality of arms,

a plurality of barbs coupled to said support structure the first plurality of arms,

a plurality of clips being slidably coupled to said support structure the second plurality of

arms and independent of said the barbs; and

means for simultaneously ejecting said the plurality of clips.

29. (Original) The apparatus of claim 28 wherein said clips comprise shape memory

material, have a memory set closed configuration, and move toward said memory set closed

configuration when ejected from said support structure.

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30. (Original) The apparatus of claim 28 further including means for moving said barbs

between a first position where they extend from said support structure and a second position

where they are retracted into said support structure.

31. (Original) Surgical connection apparatus for connecting a first structure to a second

structure, said connection apparatus comprising a support structure, a plurality of barbs, each

coupled to said support structure and having a distal end portion, a plurality of clips slidably

coupled to said support structure, means for moving said barbs between a first position where

said distal end portions are inside said support structure to a second position where said distal

end portions extend from said support structure; and means for ejecting said clips from said

support structure.

32. (Original) The apparatus of claim 31 wherein said ejecting means provides means

for ejecting said clips simultaneously.

33. (Previously Presented) The apparatus of claim 31 or 32 wherein said barb moving

means moves said barbs simultaneously.

34. (Withdrawn) A method of performing an anastomosis comprising:

everting a tubular graft structure over a support structure and passing a plurality of barbs

from the support structure into the graft to secure the graft to the support structure;

introducing the everted portion of the tubular graft structure into an opening formed in a

second tubular structure; and

simultaneously passing a plurality of clips through the tubular graft structure and second

tubular structure to secure the graft and second tubular structures together.

35. (Withdrawn) The method of claim 34 wherein said barbs are simultaneously passed

through said tubular graft structure.

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36. (Withdrawn) The method of claim 35 wherein said barbs and clips are moved independently of one another.

- 37. (Withdrawn) The method of claim 35 wherein said clips each have a memory set closed configuration and are allowed to simultaneously move toward their memory set closed configurations as they are passed through said tubular graft structure and second tubular structure.
- 38. (Withdrawn) The method of claim 37 wherein said barbs have a distal portion with a memory set configuration and are allowed to simultaneously move toward said memory set closed configuration as they are passed through the tubular graft structure.
- 39. (Withdrawn) A method of surgically connecting structures in patient comprising: placing a first structure on a support structure and passing a plurality of barbs from the support structure into the first structure to secure the first structure to the support structure; placing the support structure adjacent a second structure in a patient; and

simultaneously passing a plurality of clips through the first and second structures to secure the first and second structures together.

40. (Withdrawn) The method of claim 39 wherein each of the clips have a memory set closed configuration and are allowed to simultaneously move toward their memory set closed configuration as they are passed through the first and second structures.